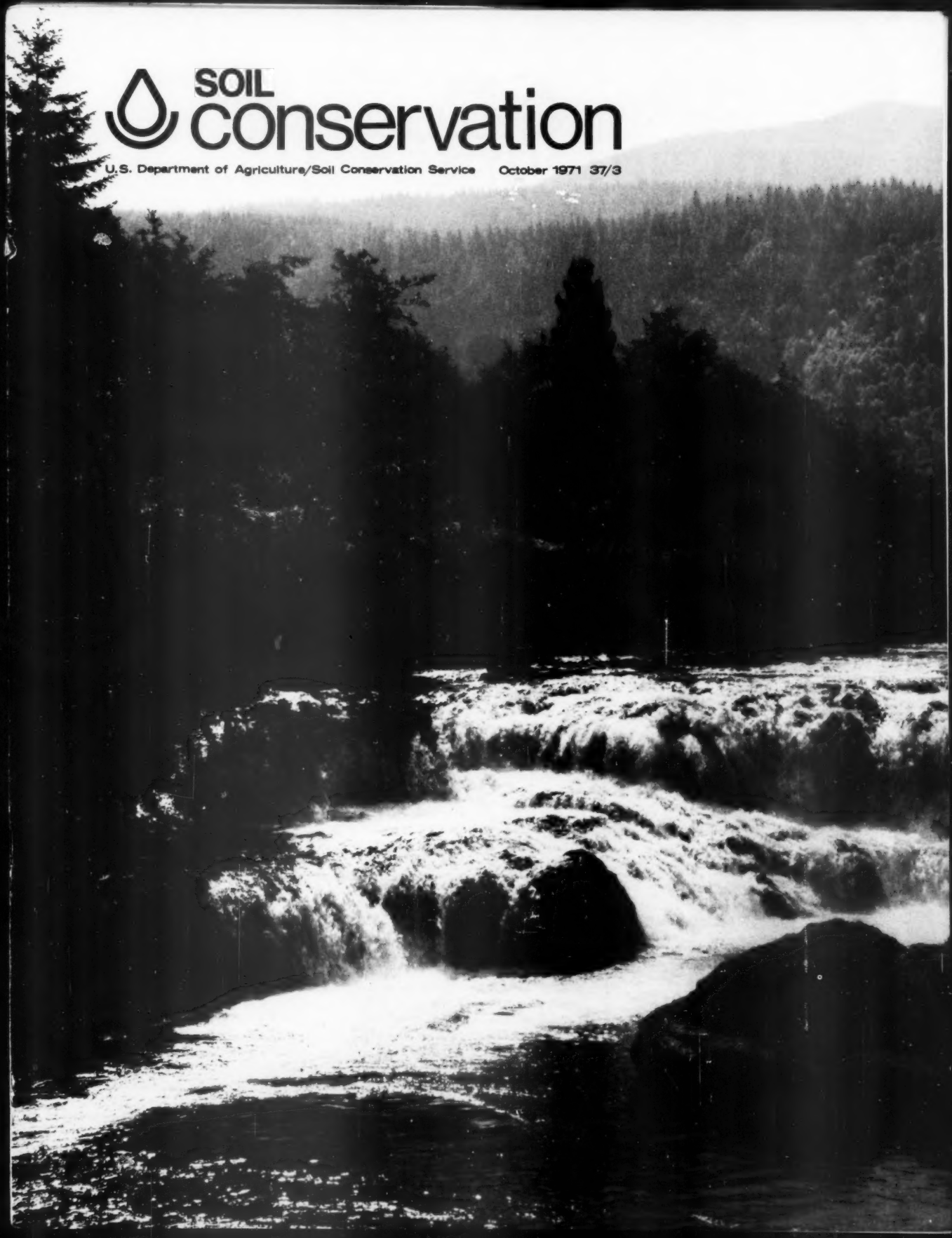
SOIL conservation

U.S. Department of Agriculture/Soil Conservation Service October 1971 37/3



SOIL
conservation
October 1971, Vol. 37, No. 3

In many parts of the country, October brings a colorful change to forest and woodland. So October seems a good time to talk about trees, and SCS Administrator Grant does exactly that in his message. Carrow Prout tells us about trees for the future in the lead article, and a Texas district conservationist recounts his "quest for a rare tree."

The photographs on both the front and back covers further suggest the theme of this issue of SOIL CONSERVATION. The front cover shows the native forest, water, and mountain in perfect balance. The photograph is by William Petty and Pat Allen and was taken in their scenic Washington along the Washougal River. The back cover shows a young tree growing up in Michigan, photographed by Erwin Cole from Nebraska.

51 **Bringing up a forest**
by Carrow T. Prout, Jr.

53 **Color it green and growing**
by C. F. Lyle

54 **Quest for a rare tree**
by Joe J. McEntire

56 **Tapping a resource with a sweet return**
by Russell V. Jongewaard

58 **High-caliber conservation**
by Arlin J. Conradi

60 **Once a sand dune . . .**
by Howard M. Goldfinger

62 **A site for sore eyes**
by George E. McGrath, Jr.

64 **Conservation in action**

66 **Recon**

67 **Meetings**

68 **Review**

71 **From the Administrator**
Let's talk about trees

Prepared in the Division of Information, Soil Conservation Service, U.S. Department of Agriculture, Washington, D.C. 20205.

CLIFFORD M. HARDIN, Secretary of Agriculture
KENNETH E. GRANT, Administrator, Soil Conservation Service
PHILLIP A. CHAVEZ, Editor
GEORGIE A. KELLER, Production Editor

SOIL CONSERVATION is the official magazine of the Soil Conservation Service, published monthly by direction of the Secretary of Agriculture as administrative information required for proper transaction of the public business. Use of funds for printing this publication approved by the Director of the Bureau of the Budget, July 17, 1968.

Reprint permission: Contents of this magazine may be reprinted without special permission. Credit is not required but is appreciated. Photos available on request.
Commercial names: Mention of commercial enterprises or brand names does not constitute endorsement or imply preference by the Department of Agriculture.

Subscription: $2.00 per year, $2.50 foreign. Single copy 25 cents. Discount of 25 percent on orders of 100 or more sent to same address. Order direct from Superintendent of Documents, Government Printing Office, Washington, D.C. 20402.

Bringing up a Forest

by Carrow T. Prout, Jr.
Chief forester, SCS
Washington, D.C.

In America the need for wood products will double in the next 30 years, and the land available for growing trees will shrink. Nothing less than a whole new forest of super trees must be grown. Just such a visionary plan is being developed by the Southern Forest Resource Council, an organization composed of representatives from the South's forest industries. About one million small-woodland owners will be called on to cooperate with industry and government to make this dream of the South's "third forest" a reality. And the Soil Conservation Service will also have a contribution to make.

This forest of the future is called the third forest to distinguish it from the second, which is serving present-day requirements, and the first—the wilderness discovered by explorers such as Captain John Smith.

Captain John Smith landed in the New World in 1607; he found a vast land of dense virgin forest. This was the South's first forest, a broad emerald belt extending from the hills of Virginia to the plains of east Texas.

Within a few years Captain Smith's settlement at Jamestown was the site of the first sawmill in America. Built by Polish and Dutch millwrights, the sawmill processed logs into lumber for houses, ships, furniture, and farm implements. The South's first forest continued to meet the nation's need for wood products as frontiers began to open up.

By 1910 the first forest had yielded more than a trillion board feet of lumber—enough to build 100 million houses. Conservationists, concerned with the increase in cutover lands and the disturbing evidence of soil erosion, began to see signs of the approaching extinction of the forest.

In 1930, economic depression began to sweep over the land. But the depression carried with it the seeds of the South's second forest. The Soil Erosion Service, predecessor of the Soil Conservation Service, began planting trees in

1934. The eroded hillsides of southern farms and cutover and burned forest lands were the first areas planted.

The fire protection programs of the various state forestry agencies were paying off. A drastic reduction in tree loss due to forest fires was beginning to be felt at this time.

Individual states began to take over the production of tree seedlings. They greatly increased this production during the early 1940's. And, at about this time, SCS began to move away from the project type of public works. Working through soil and water conservation districts, SCS began to concentrate on helping the individual district cooperator prepare a conservation plan for his land.

It is with the individual woodland owner that SCS has made its greatest contribution to the South's second forest. Sixty-four percent of the entire land area of the Southern States is forest land; 42 percent is privately owned by district cooperators who have been helped by SCS in working out a complete plan that includes woodland conservation. These district cooperators have planted nearly 14 million acres in trees, improved about 11 million acres of forest land, and harvested pulpwood, saw logs, poles, and other forest products in a prescribed manner from more than 27 million acres of woodland. And SCS helped them do all of this.

Contrary to predictions there has been no funeral for the South's forest industry. Between 1935 and 1965 an estimated 150 billion cubic feet of timber was harvested to supply the ever-expanding pulp industry, sawmills, and other manufacturers of wood products. And a 1965 timber survey showed that the South still had a bank account of 145 billion cubic feet of standing timber—15 billion cubic feet more than it had in 1935.

But the demands of the nation are ever increasing. Before the end of the century it will be necessary to grow another forest in the South

—and on a land base reduced more and more by expanding population centers, airports, highways, and dams.

The Southern Forest Resource Analysis Committee report, published by the forest industries in 1969, recommends timber stand improvement as the quickest, most economical, and most effective way to start the South's third forest. It also recommends the planting of 30 million acres with genetically superior tree stock and increasing and improving fire prevention and control programs.

Ultimately, the success of the South's third forest will depend on the massive extension of improved forestry practices to the small privately owned woodlands. The third forest effort presents a vehicle for the closest cooperation between all people and agencies. The Soil Conservation Service has assured the forest industries that it will continue to cooperate with them through conservation districts in helping landowners grow the forest of the future. ◆

Color it green and growing

by C. F. Lyle
Project coordinator, SCS
Wiregrass RC&D Project
Ozark, Alabama

The great problem facing the sponsors of the Wiregrass Resource Conservation and Development Project can be summarized in one word—underdevelopment. The vast natural wealth of the nine counties in the southeastern Alabama project area—including 1 million acres of cropland, more than 2 million acres of timberland, and 8 billion tons of mineral reserves—is largely underdeveloped. Of 2,288,000 acres of timberland, for example, almost one-half needs improvement.

Underdevelopment is, however, a problem that suggests its own solution, and the RC&D Project planners have given first priority to measures that will accelerate land treatment and offer immediate possibilities for increasing farm income.

Now, a forestry improvement association is beginning the needed development of the land. The Henry Forestry Association, Alabama's first, was organized in October 1969 by a group of community-minded timberland owners. The association numbers about 100 members.

C. S. Keller, president of the association, said that the main objective of the association is to coordinate a program that will help Henry County woodland owners carry out an improvement plan for their woodland. "A study of forests in Henry County by forestry experts indicated that we need more selective thinning, control of undesirable species, tree planting, and fire protection," said Keller. And he added, "The cost of these improvements would have made them prohibitive to many landowners in Henry County. Many woodland owners have small acreages and don't have the time and money to carry out needed improvements without some type of assistance. We felt that an organization of this type could help them get started."

Association members are eligible for technical and financial assistance in the association program; they pay $10 annual membership dues.

About 50,000 acres of woodland in Henry County need improvement. All 50,000 acres need improvement planting; 25,000 acres will have to be cleared before the planting can be effected. The association is currently working on a program to chop the undesirable woody growth from about 6,500 acres of land and plant it in pines. A rolling chopper for land clearing has been purchased and is rented to association members for $4 per acre. The total cost of site preparation comes to about $31 per acre. When a site is cleared, selected species of pine are planted on a 10- by 6-foot spacing, 726 trees to the acre. The association also provides a tree planter to members for $4 per acre.

In addition to site preparation and tree planting, the association is seeking better markets for its members and is working to obtain another fire-watch tower for the southern part of the county.

From its inception, the forestry association has received support and technical assistance from the Department of Agriculture. C. Glynn Blackwell, SCS district conservationist; Bobby Bradly, Henry County forest ranger; and Douglas Smith, RC&D forester with the Alabama Forestry Commission, were all instrumental in helping to get the association organized.

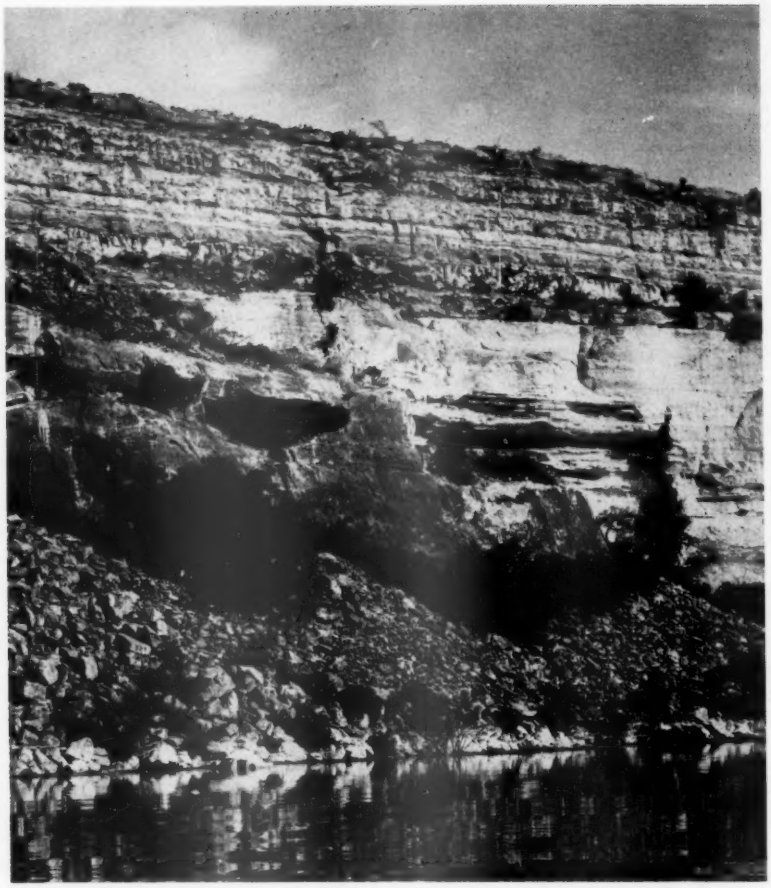
The association has the support of the Henry County Soil and Water Conservation District and the Henry County RC&D Steering Committee. Technical assistance has been pledged by the Soil Conservation Service, the Extension Service, and the Alabama Forestry Commission. Rural Environmental Assistance Program cost-sharing is available for site preparation and tree planting, and the association's purchases of equipment—rolling chopper, tree planter, and scraper—were made possible by an RC&D loan through the Farmers Home Administration.

Sponsors and planners of the Wiregrass RC&D Project, attempting to provide a better standard of living through resource development, agree "This is the way it's done." ♦

Land clearing is easier with a rolling chopper. Members of the Henry Forestry Association rent this one for $4 per acre of land cleared.

Quest for a rare tree

by Joe J. McEntire
Area conservationist, SCS
Uvalde, Texas



My search for a rare tree, the Texas Pistache (*Pistacia Texana*), began more than 2 years ago; it ended successfully recently along the remote canyon walls of the Rio Grande several miles below the Pecos River.

Previously, ecologists and conservationists had feared that a seed source for this rare tree had been lost, for the newly impounded waters of Amistad Lake in the summer of 1968 covered the only two Pistaches known to local ranchers before seed or cuttings could be secured.

In 1969, searching high up on limestone cliffs, I located two trees, a male and a female, but their seed was not mature. I was unable to return to the remote canyon area later in the season to secure seed, so the project was shelved.

The following year, I returned to the area, accompanied by Jack W. Stevens, SCS soil scientist in Uvalde, and Leon R. Walton, a local rancher. We quickly spotted the trees that I had discovered the previous year, but, to our disappointment, when we reached them we saw that the female tree had been surrounded by rising water from Amistad Lake and was dead. The male of this tree species cannot produce seed alone, so Amistad Lake had again frustrated our hopes.

We searched further in the same area but higher up on the canyon wall. Finally we found a large Pistache with a good crop of mature purple berries.

Now that a collection of seed has been secured, further evaluation of the rare tree is possible. SCS re-

searchers will study Pistache plantings at the James E. Smith Plant Materials Center in Knox City, Texas.

The Texas Pistache should be a valuable ornamental tree. An evergreen, its mature foliage is dark green, and its springtime new growth is crimson red. Late in summer the developing fruit is first a reddish color; later, as it matures, it turns purplish black.

The value of the tree's fruit for birds and other wildlife is not known, but its seed should attract birds early in fall. Goats have browsed the trees that were found, suggesting that the Pistache may also prove to be a useful food for deer.

In all, we located about a dozen Pistaches that are beyond the reach of the waters of Amistad Lake. Some of these trees are no doubt males, and others are in nearly inaccessible areas on the steep limestone cliffs, but probably there are enough accessible females to provide a seed source for further evaluation. If Texas Pistache turns out to be a desirable native ornamental, it will be available in a few years to commercial nurseries and the public. ♦

The Texas Pistache has been found only in the remote area around the mouth of the Pecos River. The rising waters of Lake Amistad (top, left) drowned these Pistaches before seed could be secured. (Above) Jack Stevens, an SCS soil scientist, examines a Pistache that was found well above the reach of the lake waters. (Right) Joe McEntire, the author, examines seed on the rare tree.

Tapping a resource with a sweet return

by **Russell V. Jongewaard**
District conservationist, SCS
Little Falls, Minnesota

Central Minnesota's invigorating climate is ideal for making maple sap flow. Twelve years ago, Roman Klisch knew this but knew little else about maple syrup production. Today, Klisch is recognized as one of the best maple syrup producers in Minnesota.

Klisch has seeded down his 180-acre farm on the banks of Two Rivers Creek in Morrison County and concentrates his time and effort on a south 40 that has a beautiful stand of sugar maple.

"I logged the first 20 acres of this sugar bush in 1930 and the other 20 acres in 1935, selecting several thousand board feet of basswood, oak, and elm and leaving the sugar maple," said Klisch. "It wasn't until 12 years ago that I started thinking about tapping the maples."

Klisch and two of his sons first cleared brush, cut down snags and cull trees, and opened up a few trails. "Next," said Klisch, "we had to get an evaporator and learn how to cook sap."

From 1963 to 1966, Klisch spent many hours learning about maple syrup production. He drove many miles to attend meetings and to visit producers in Minnesota and Wisconsin. "I learned a lot, but I still have plenty to learn," confesses Klisch. The Soil Conservation Service and Marv Smith and Bill Miles, Extension Service foresters at the University of Minnesota, gave encouragement.

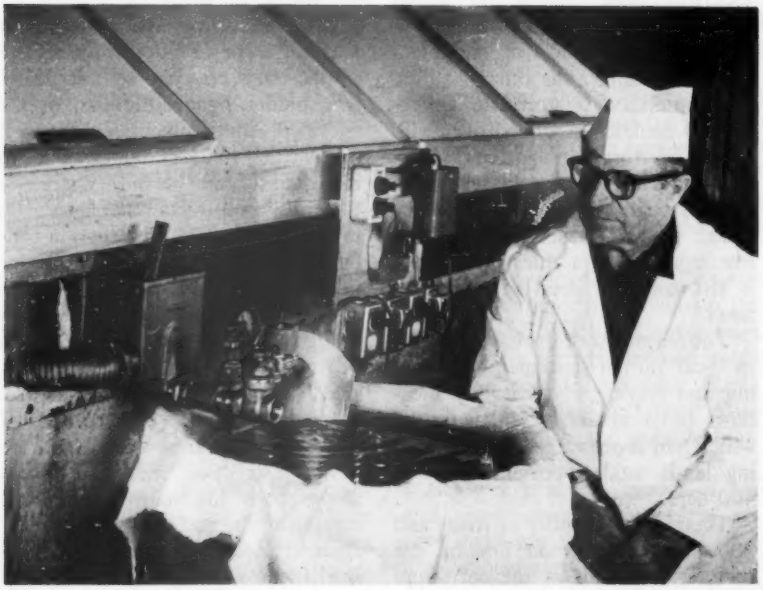
In 1966, Klisch purchased an evaporator from a defunct operation on the North Shore of Lake Superior. The 6- by 18-foot copper evaporator was modified and converted from wood burning to oil burning and installed in a new 30- by 40-foot building. The evaporator, fired by three oil burners that use 24 gallons of fuel per hour, is automatically controlled and when going full blast cooks 400 to 600 gallons of sap per hour.

Freshly collected sap is stored in two 6,000-gallon glass-lined storage tanks inside the sugar house; from there it is pumped automatically to an overhead tank that feeds by gravity directly into the evaporator. From tree to evaporator, the sap is filtered seven times. The glass-lined storage tanks are equipped with ultra-violet lights to keep down the bacteria count.

"The first sap started boiling through the evaporator on April 6, 1967. We cooked down 40 gallons of sap for 1 gallon of syrup," Klisch said. "My son Joe was foreman of the woods crew. He had about 10 of his high-school buddies in the woods every day collecting sap from 3,000 taps. All of our sap is collected in specially made heavy-duty plastic bags and hauled in a mobile tank to a central collection tank. From there the crystal clear raw sap is pumped into a 1,500-gallon stainless steel tank on a truck and hauled a mile to the evaporator," Klisch stated.

Mrs. Klisch and Mary, one of the 12 Klisch children, operate the finishing pan in the sugar house. This final process gives the syrup a perfect density of 66.5. The maple syrup is collected and stored in 5-gallon cans until it is bottled and sold. Some finds its way to local residents, and the remainder is sold in bulk to wholesalers.

The 40 acres of sugar maple was divided into 62 plots in 1966. Each plot is now numbered so trees can be located for an accurate study of production. Each tree is also pinpointed on a map and its diameter



recorded for a detailed inventory. The map will also be used to design a central collecting system, using plastic tubing.

Roman Klisch is a cooperator with the Morrison County Soil and Water Conservation District. He is an ardent conservationist and influential booster of district programs. He states that the secret to the success of his sugar bush is the natural forest floor in his woods that has never been grazed or abused. ♦

(Top) Plastic bags are now used to collect the maple sap, otherwise the art of tapping sugar maples remains the same.
(Bottom) From tree to evaporator Roman Klisch filters the maple sap seven times. Here he awaits a run of maple syrup from his evaporator.

High-caliber conservation

by Arlin J. Conradi
Agronomist, SCS
Woodward, Oklahoma

High-caliber conservation is fact, not theory, at the U.S. Naval Ammunition Depot in McAlester, Oklahoma.

The depot represents a complexity of resource problems and opportunities. Conservation work there has to support the basic mission of the depot and, at the same time, protect the natural resources.

The mission of the McAlester Depot is to produce ammunition (ordnance, in military terms) varying in size from light artillery to small guided missiles. The funds used to finance the installation come entirely from competitive contracts awarded by the various branches of the military. The technical competence of the base's work force makes it one of the most efficient operations of its kind in the nation. About 2,600 civilian personnel and 150 military personnel work at the base.

Being a production facility, the base is concerned about safety and security. Nine production plants are scattered throughout the reserve so that an explosion at one plant will not endanger the others.

Ammunition is stored in aboveground facilities mounded over with soil. The storage magazines, sometimes called igloos, occur several to a group, and 57 groups are on the base. The land used to store ammunition serves a dual purpose; it is also used for deer-herd management.

The perimeter of the base is leased to local farmer-stockmen for grazing and haying. Native hay meadows cover about 10,900 acres, of which half is mowable. Native grazing lands total approximately 10,400 acres.

There are 400 miles of roads and 200 miles of railroad line on the base. About half of the roads are paved, and the rest are gravel.

The man due much of the credit for the conservation work is Jim Hodge, the depot's national resources manager. Hodge, a southeast Oklahoma native, is by any standard a practicing ecologist with a love for the land and its bounty. A graduate forester, he worked with the U.S. Forest Service in Idaho and Arizona for 6 years before coming back to the country he calls his own.

When Hodge began his job in 1966, the Navy had asked for help in revising a conservation plan made in 1952 through an agreement with the Pittsburg County Conservation District. SCS range conservationist Neal Stidham worked with Hodge in completing details of the plan.

The foundation for the plan was a soil survey of the entire depot. "This plan was the easiest I have ever implemented," said Hodge. "Now some 5 years later the work being done is primarily management and maintenance.

"I'd call a soil survey the key to any natural resource management plan," Hodge continued. "To try to manage a unit without soil survey data would be literally shooting in the dark.

"When we draw up a lease for grazing or haying, we include in it part of the conservation work needed in the area covered by the lease. The bidder figures the cost of the specified improvements, charges it against the value of the contract to him, and submits his bid. The lessee generally contracts the agreed-to improvements to a construction contractor or vegetation vendor," Hodge explained.

"This may be an unusual way of doing business, but it sure has proved successful for us," Hodge said. Most of the erosion-control work done on the depot consists of revegetating critical areas, such as new construction sites and slopes along roads and railway lines, and stabilizing the sod on storage magazines. Roadway cutslopes are smoothed after construction and sprigged to bermudagrass, if seasonal, and overseeded with annual ryegrass. Straw mulch is blown on the cutslopes and is cut in with a roller.

"The annual ryegrass not only gives us good temporary slope protection but also provides excellent

winter grazing for our deer herd," Hodge said. About 200 acres of annual ryegrass is sown every year for erosion control.

The ammunition storage magazines require regular attention to keep erosion in check. Because of the steep slopes, sloughing is the most common problem.

"When we were revising our conservation plan back in 1966," Hodge said, "Neal Stidham used the soil map to locate four sites for getting topsoil suitable for use on the magazines. The soil for this purpose not only has to be fertile but stable too."

The storage magazines are sodded to bermudagrass, but, according to Hodge, after several years the native grasses and forbs take over.

Hodge's most recent conservation efforts have been directed toward water pollution. In steam cleaning cartridges, machinery, and storage facilities of TNT and other explosives, chemical solutions are flushed into nearby drainage systems. These chemicals had been believed to be nonbiodegradable. Concerned with the off-depot effects of these chemicals in the area's watercourses, Hodge and a Naval Ammunition Depot chemist, Ellis Pardee, set about to see if the pollution could be brought to a stop.

Through close observation and laboratory studies, the team discovered that the TNT solutions were degradable if retained for a sufficient time in holding ponds. Therefore, six ponds designed to hold runoff from the munitions plants were constructed. The ponds functioned so effectively that scheduled construction of a $300,000 purification plant was canceled. Other military bases heard of this success and began substituting ponds for expensive purification systems.

"What's even more important than the money saved," Hodge noted, "is that the water leaving the ponds is clear and free of chemical contamination."

As resource manager at the McAlester Depot, Hodge oversees still another conservation program—wildlife management. Efforts are made to maintain a herd of approximately 1,600 deer. Small game animals, upland game birds, and numerous species of song birds also make the Naval Ammunition Depot their home. Some 20,000 ducks and 9,000 geese overwinter on the base, along with six bald eagles.

Critical areas such as this cutslope get immediate attention at the McAlester Naval Ammunition Depot. Mulch is blown on cutslopes after sprigging or overseeding and then is cut in with a roller.

Fishing in the 100 ponds and lakes is a popular sport for employees and visitors. The lakes are well stocked with native gamefish and imported northern pike. The depot accommodated 2,700 fishermen during 1970.

The Bureau of Sport Fisheries and Wildlife and the Oklahoma Department of Wildlife Conservation work closely with Hodge and public works officer, Commander C. G. Bush, in providing technical assistance for the fish and wildlife management program.

Being a practical model of soil and water conservation, plant science application, and fish and wildlife management makes the McAlester Naval Ammunition Depot a natural for environmental studies. Students of nearby East Central State College, Oklahoma University, Eastern Oklahoma A&M College, Oklahoma State University, and area high schools tour the depot each year to study conservation and plant and wildlife ecology. More than 350 students were given conservation tours in 1970.

The total visitor count, including hunters, fishermen, sightseers, boaters, and students, during 1970 was 5,900. ♦

The U.S. Naval Ammunition Depot, McAlester, Okla., was first-place winner in the Navy's 1970 Natural Resources Conservation Awards. In 1969, it tied for second place in the Secretary of Defense Conservation Awards.

Once a sand dune . . .

by **Howard M. Goldfinger**
Information Division, SCS
Washington, D.C.

Alexander B. Maley will again harvest Christmas trees this year from land that was once considered of little value. Beginning in 1947, this strictly summertime resident of Michigan's northwest resort country has revitalized nearly 2,000 acres of sand dunes and scrub land by planting two and a half million trees. His success points to the revival of a whole area's economy through land-use planning.

Today, Michigan's northwest lower peninsula is a thriving place for orchards, forests, Christmas tree plantations, second homes, and year-round visitors. But in 1947, when Maley bought his first 40 acres of sandy pastureland above Little Platte Lake in Benzie County, land in the area was selling for $5 an acre.

For this once-forested region, the year 1947 was a time for striking out in new directions. Land values were at rock bottom, after having reached a peak during the 10 years following World War I when lumber ruled. But the lumber industry was now largely a thing of the past. And much of the farming that had moved in after the timber had been clear-cut remained marginal.

The combination of national economic depression and clear-cutting had left the area's economy and natural resource balance in a painful condition. But World War II was over. More people than ever were —or soon would be—on wheels, scouting for retreats in the countryside where they could escape the cities during the hot summer months.

In buying his first land, Maley had in mind profit from timber as well as a summer place. The outlook seemed promising to this young chemical company owner from Chicago, for he was reading the signs of restored timber potential—he knew that between 1936 and 1939 the Soil Conservation Service in experimental demonstration projects had planted more than 1,300,000 trees and shrubs in the Michigan sand-dune country.

SCS, working with the Civilian Conservation Corps, had developed methods for establishing temporary brush and vegetative cover on the blow-prone dunes. The cover was designed to hold long enough for selected tree plantings to get well started. The light-colored sand took Scotch and jack pine best. The darker sand sites of higher fertility were suited to mixtures of red and white pine.

The practicality of these methods was mirrored in the steady 3 million plus average for tree and shrub plantings in the state by soil conservation district cooperators each year from 1940 to 1946. Then, the war over, the tree-planting trend really took off, rising to 5 million trees in 1947, jumping to 13 million in 1952, and cresting at 32 million in 1958.

Maley himself was part of this upward movement. He joined the Benzie County Soil Conservation District as a cooperator in 1947. Then and thereafter, he worked out woodland - oriented conservation plans for each of the several tracts he acquired. He was assisted in developing the plans by Arvid Tesaker, a Soil Conservation Service conservationist working with the Benzie District.

By May 1958, Maley owned nearly 2,000 acres in the county and had planted close to a million trees. His conservation district cited him

Michigan sand dunes are productive again. These Christmas trees (above), tightly sheared by hand, take 12 or 13 years to mature for marketing, according to Alexander B. Maley on the left, here seen with Arvid Tesaker, SCS district conservationist in Benzie County.
(Left) Outdoor scenes of trees and dunes are frequent subjects of the oil-painting skills of Maley. His studio, shown here, is part of the Maley house in Honor, Michigan, overlooking Little Platte Lake. The house stands on part of the original acreage bought by the painter-conservationist a quarter of a century ago.

for his "outstanding tree-planting program." By then also he had switched from a lumber and pulpwood operation to Christmas trees.

Today, Maley harvests Scotch pines for the Christmas tree market, in which Michigan has come to rank near the top nationally. The trees, from plantations covering about 500 acres, are ready to be marketed as 6-footers in 12 or 13 years.

Aside from his Christmas tree plantations, Maley's land is mostly in red pine, some mature enough for thinning—the first step in selective harvesting. Benzie County as a whole boasts some 10,000 acres of similarly reforested land. Land prices in this still burgeoning area have risen steadily to $250 and more an acre.

Maley sees the personal goals he has attained as part of the larger picture of regional development. Two recent gifts from him highlight his thinking and approach. Because he believes the key to healthy progress for the area lies in preserving the "built-in wilderness quality" that makes it so attractive for summer visitors, he recently gave 169 acres of wetland to the Nature Conservancy, Inc., of Washington, D.C., for permanent upkeep as a natural reserve. His second gift, 220 acres alongside Sleeping Bear Dune National Lakeshore, went to Northwestern Michigan College in nearby Traverse City. This site, also to be maintained as a nature area, will be the college's outdoor laboratory and research center.

Maley feels that land-use planning in Benzie County and the 12 other counties included in the Northwest Michigan Resource Conservation and Development Project will help protect the orchards, forests, and wilderness areas that are the linchpins of the local economy and, at the same time, keep the building of second homes in balance with these interests.

The dollars and cents and social soundness of this view has 25 years of living proof to recommend it. ♦

A site for sore eyes

by George E. McGrath, Jr.
Information Division, SCS
Washington, D.C.

If your eyes smart for no apparent reason, look around—it might be air pollution from a nearby, open-burning dump. It may hurt just to look at the smoking mess and blowing paper. But don't curse the trash. Get it working for you.

The sanitary landfill, where refuse is deposited, compacted, and covered daily with a layer of soil, is steadily replacing the old open dump. And, when the fill is completed, covered, and grassed, many surprising things can result: parks, playgrounds, football fields, golf courses, or farmland.

Take Big Spring, Texas, for example. Big Spring is the county seat (population 35,000) of Howard County in western Texas. This city found a common solution for three problems.

Big Spring urgently needed a suitable site for disposal of 90 tons of refuse a day. Two farmowners, in an area next to an industrial site and adjoining a major highway, were losing valuable pastureland to deepening gullies and other forms of soil erosion. And near the same site, the Texas Highway Department was faced with costly repairs on Interstate Highway 20 as water ate away at the roadbed. These trouble spots covered an area of about 25 acres.

Could the gullies be filled with refuse? Had the city found the right site for its solid-waste disposal problem? And would a waste-disposal project on this site help stop erosion of the highway and reclaim good agricultural land?

City leaders, landowners, and the Texas Highway Department got a "yes" answer to these questions from the Soil Conservation Service. Planning began in 1966 and led to the project's full-scale operation the following year.

A soil survey of the area showed that soil on the site had adequate drainage and permeability. It was not too sticky when wet, and it could be worked in any weather. The soil could support plant growth, it was not shallow to rock, and landfill seepage—called leachate—could filter slowly through it and be purified along the way.

Easements were secured from the landowners for use of the site for the 3-year life of the project. The highway department and the city agreed to furnish funds, manpower, and machines for landfill operation and maintenance and to construct waterways, culverts, and fences.

The U.S. Department of Health, Education, and Welfare granted $90,000 over 3 years for help in financing the project and for a weigh-station to weigh the trash before it was dumped into the gullies.

The sanitary landfill is now completed, and its multipurpose objective has been fully carried out. Agricultural land has been reclaimed; it not only looks good but is worth more—about $100 more per acre. And damage to the highway has been halted and corrected. According to Joe Smoot, an engineer for the Texas Highway Department, the cost of highway repairs in the landfill area went down from $60,000 to $3,400 during the 3-year period.

For 3 years Big Spring had a suitable site for its trash. The cost of operating the fill had been less than $1 a ton. Big Spring citizens, enthusiastic over the project, had hauled much of their solid waste to the landfill themselves. The city has secured two other sites for future solid-waste disposal.

This project was one of the first in the United States in which agricultural land was reclaimed by using municipal waste. It won the Fort Worth Chamber of Commerce Conservation Award for 1970. ♦

(Top) Shown here is the site of the Big Spring sanitary landfill. City wastes filled both gullies over a 3-year period. (Bottom) Cows graze where once they wouldn't tread. The formerly gullied area is now pastureland.

To Big Spring
U.S. 80 - Interstate 20
Gully No. 2
Gully No. 1
Property Line
Beals Creek

conservation in action

Instant trees—not quite

In Muskegon County, Michigan, people shake their heads in disbelief at the results of a land-reclamation project that 28 years ago was intended as an instructional exercise in conservation.

In 1943, Fruitport school children planted pine trees in a barren, sandy 50-acre parcel of tax delinquent land given to them by the Michigan State Land Office Board.

Most of the land was severely damaged by wind erosion. "Blowout" areas were numerous, and many exceeded 10 feet in depth. The children reforested these "blowouts" without any furrows because it was impossible for a tractor to get traction in the unstable sand. Consequently, some of the tree rows are anything but straight and parallel. But this hasn't hampered the ability of the trees to control sand blowing.

Some of the townspeople in the school district who plowed furrows for the trees in the loose, shifting sand said the seedlings would never grow. But they did.

The survival of the trees, considered so dubious, was insured by the diligent care of school children over the last 28 years.

Today, 12 pulpwood cutters are earning as much as $40 a day thinning the school's plantations.

Both the Soil Conservation Service and the North and South Muskegon soil conservation districts helped the Fruitport school children in their tree-planting program. The two districts donated half of the trees for planting. They signed up 60 schools in Muskegon County as cooperators. These schools have since consolidated into six major school systems, and all six are district cooperators.

SCS explained to the school children why different tree species are planted in certain soil types and told them about the importance of trees to wildlife, recreation, and the total environment.—WOODROW H. BARCLAY, *area conservationist, SCS, Grand Rapids, Mich.; and* HENRY DIERKING, JR., *district conservationist, SCS, Muskegon, Mich.* ♦

John Jenkins (left) and Frank Campbell cut pulpwood in a red and pitch pine plantation. This is the first thinning of the Fruitport Consolidated School forest in Muskegon County, Michigan, which was planted by students and parents 28 years ago. At that time this was an area of bare sand ridges and deep "blowouts." Trees now are 6 to 10 inches in diameter and 35 to 40 feet tall.

Trees are for people

Harold Engstrom has trees that attract people from miles around, winter and summer.

Engstrom has a ranch near Camino, California, in the foothills of the Sierras. Part of his ranch is a Christmas tree plantation that he calls "Santa's Acres." Here he sells Christmas trees on a "choose and cut" basis. Pine, fir, and Sierra redwood are available in various sizes. Seedlings reach salable size in about 4 years. Engstrom says, "Countless people—both children and adults—have told me how much they enjoy selecting and cutting their own Christmas tree."

On another part of his ranch,

Engstrom has set up day-camp and picnic facilities. This is an area of pine and fir stands. In summer, it is always cool and inviting and makes an ideal recreation area for people of all ages.

Engstrom has followed carefully the advice of the Soil Conservation Service in planning his wooded areas for people. And people, especially from the nearby Sacramento area, which has a population of more than half a million, appreciate his efforts in providing them with open space and outdoor recreation.—ROBERT A. DELLBERG, *former state forester, Berkeley, Calif.* ♦

Rainstorm proves a point

A severe rainstorm last May has provided some preliminary data on the success of conservation measures in the 4,000-acre Shobe Canyon drainage area in northern Oregon.

The storm caused an average loss of 10 tons of soil per acre on cropland protected by conservation work. Soil loss on unprotected or poorly protected land averaged 150 tons per acre. In some areas all topsoil was washed away.

Most of the work is being done with cost-sharing under the Rural Environmental Assistance Program of the Agricultural Stabilization and Conservation Service. Improvement of the Shobe Canyon channel is proposed as a measure in the Columbia-Blue Mountain Resource Conservation and Development Project. ♦

Scattering Fork watershed wants wildlife

Biologists with the Illinois Department of Conservation and the Soil Conservation Service are working with landowners in the Scattering Fork watershed in Illinois to establish a lush alfalfa-brome seeding along an improved channel and to plant additional wildlife shrubs in other areas.

Twenty landowners have agreed to work out a wildlife plan for their farms. Each plan varies but in general includes the planting of shrubs, such as autumn olive, silky dogwood, bush honeysuckle, and multiflora rose, and pine trees on both sides of the improved channel and in other odd areas of each farm. The Illinois Department of Conservation is furnishing a tree-planting machine to make the task easier.

These landowners and others will also cooperate with drainage districts to maintain a strip of alfalfa and bromegrass nesting cover, 15 to 30 feet wide, on each side of the channel. It is hoped that the plantings will attract pheasants, rabbits, ground nesting songbirds, and other small game to the Scattering Fork watershed.—JOE FASIG, *district conservationist, SCS, Tuscola, Ill.* ♦

Israel's top forester honored by AFA

Amihud Y. Goor, of Tel Aviv, founder of the first Department of Forestry and Forest Research Station and Arboretum in the Middle East, was conferred a top honor this month by the American Forestry Association at its 96th annual meeting in Seattle, Washington.

Goor received the Bernard Eduard Fernow International Forestry Award made annually by the American Forestry Association and Deutscher Forstverein of Germany.

The Israeli forester made a world study of soil erosion in 1938 as the first step in coming to grips with reforestation of arid zones. Visiting Nigeria, Sahara, Algeria, Morocco, the United States, Japan, China, Malaya, Java, India, and Ceylon, he compiled one of the first comprehensive studies of erosion control; the results were published by the Oxford Press, under the title, *A World Tour for the Study of Soil Erosion Control Methods.*

Goor also pioneered in the problem of sand-dune fixation under arid conditions and introduced the "deep planting" system, which is now standard. He also introduced and developed the "bare-hill planting" method that averted much of the erosion damage caused by heavy rains.

Goor personally collected and introduced from five continents many of the 1,000 exotic species chosen for trial at Israel's Experiment Station and Arboretum.

Africa, India, Asia, and North and South America have all benefited from the fruits of his research. ♦

Recon . . .

Trees are beautiful. "The aesthetic enrichment from the use of trees and shrubs in man's environment has long been recognized. Ancient people such as the Egyptians, Greeks, Romans, and Chinese were noted for the use of plants in everyday living.

"The United States lagged in developing aesthetically. The development of new land areas and the impact of industrialization and agriculture left little time for aesthetic advancement. Historically, as a country or civilization becomes older or better established, aesthetics become more a part of everyday living."—DR. E. P. LANA, *head of the Department of Horticulture, North Dakota State University.*

Whale of a program. Secretary of Commerce Maurice Stans has designated Washington University, Oregon State University, Texas A&M University, and Rhode Island University as the nation's first Sea Grant Colleges, the maritime world's counterpart to Land Grant Colleges. The sea grant program was signed into law back in 1966.

Woodsy Owl was the guest of USDA Secretary and Mrs. Hardin at a press conference announcing that Woodsy will be the U.S. Forest Service's national symbol dedicated to combating pollution and improving the environment of forests, woodlands, and open lands. Woodsy and his "Give a hoot, don't pollute" will be featured in a national public service advertising campaign.

Four workshops for land-improvement contractors to improve management techniques and operational skills and to achieve higher profits will be held during February 1972 in Columbus, Ohio. This annual project, a cooperative undertaking of the Farm and Industrial Equipment Institute, the Soil Conservation Service, and the Land Improvement Contractors of America, covers virtually every aspect of the business of a land-improvement contractor. Information is available from the Farm and Industrial Equipment Institute, 410 N. Michigan, Chicago, Ill. 60611.

Down by the new channel. Trout Unlimited and the town of Vail, Colorado, have asked SCS to help "dechannelize" a stream. The channelization of Gore Creek by private contractors resulted in repeated flooding of part of Vail's new golf course, the loss of fine trout fishing, and a general eyesore. The SCS channel-improvement plan envisions building jetties out from the banks to create pools during low water, placing boulders along the banks to hold water and provide shade, and replanting the banks with grass and willow. If experimental work now being done proves successful, Vail will again have dry golfing and wet fishing.

Frost-free grapes. The demand for SCS technical assistance in Napa Valley, California, has increased with the rapid increase in the use of water for frost prevention of grapes. Fifty gallons of water per minute per acre are required for frost prevention. This has prompted the building of storage reservoirs in Napa Valley to insure an adequate supply to operate the sprinklers over large acreages of vineyards.

Survival of the fittest. Sinauer Associates, Inc., has published a game named *Extinction: The Game of Ecology*. Designed as much as a teaching device as a means of entertainment, *Extinction* is a simplified model of nature that incorporates strategy, competition, predation, environmental and topographical changes, and the impact of man on the environment into a game of species survival. *Extinction* was invented by Professor Stephen P. Hubbell of the University of Michigan; it costs $11.95.

Those were the good old days? "It is simply not true to say that the natural environment is worse off today than it was fifty years ago. On the contrary, today we have more and bigger and better managed forests than we had then, and in addition have developed the science of forestry . . . . We have game laws and virtually all our waters are stocked, and as a result have overall probably better fishing and hunting than could be found 70 years ago . . . . In this country, by contrast with others, the great majority of natural wonder spots and historic shrines are owned and preserved and managed for the public."—LIEUTENANT GENERAL F. J. CLARKE, *chief of engineers, U.S. Army*. Remarks to the Red River Valley Associaton, Shreveport, La., April 12, 1971.

M. D. Burdick, state conservationist for Colorado, reports that one of Colorado's first RC&D flood-prevention projects has recently survived its first trial by water. In two heavy rainfalls on the 14th and 19th of August, flash flooding of the town of Walsenburg's commercial district was prevented by the Alessi Flood Prevention Dam. On the 19th, the dam caught and held 11 acre-feet of water, which is equivalent to the runoff from a 5- to 10-year storm. The Alessi Dam, completed in June 1971, is part of the Sangre de Cristo RC&D Project.

City wastes on the farm. Tests conducted by the Tennessee Valley Authority indicate that composting has major potential as an alternative means of waste disposal and not as a profitable soil amendment. Greenhouse tests showed that com-

posted municipal wastes increased yields, but these increases were not sufficient to pay for the cost of composting, hauling, and application. Another potential problem was that crops grown with compost contained higher-than-normal amounts of copper and zinc. Sustained heavy applications might lead to toxic levels of heavy metals in soils.

The U.S. Geological Survey is presently conducting a major study of the effects of underground waste storage on subsurface water systems and geologic structure. The major aim of the program is to develop enough knowledge to assess levels of risk and predict the effects of disposal schemes. The program, which will be ongoing, includes a number of specific projects, such as seismic monitoring of an experimental disposal well in Alabama and assessment of the problems of subsurface waste storage in the Ohio River Basin. Of particular interest to SCS will be the results of a planned study of the dispersion coefficient of underground waste through subsurface water systems.

The Connecticut Legislature passed an act reading: "Any planning commission, zoning commission, or planning and zoning commission of any municipality may use soil survey maps of the Soil Conservation Service of the U.S. Department of Agriculture as a standard in determining land use, planning, zoning, or development regulations."

The Frederick Soil Conservation District has received the 1971 Goodyear Conservation Award for Maryland, and Ernest E. Runkles of Mt. Airy has been named the "outstanding landowner-cooperator" in the district. The Frederick District will represent Maryland during a 4-day study visit to the Goodyear Farm near Phoenix, Ariz., in December.

Meetings

October

3-8 Water Pollution Control Federation, San Francisco, Calif.
Theme: Environmental Policy Administration and Legislation
Keynote speaker: Ronald Reagan, Governor of California

10-13 American Forestry Association, Seattle, Wash.
Theme: Toward Balanced Forest Use
Keynote speaker: Morris K. Udall, Congressman from Arizona

11-13 Future Farmers of America, Kansas City, Mo.

13-15 National Conference of Editorial Writers, Pittsburgh, Pa.
Panel: Environment: Fad or Fact of Life?

13-16 National Association of Biology Teachers, Chicago, Ill.
Theme: Emphasizing the role of biology education in the environmental crisis

14-15 American Forest Institute, St. Louis, Mo.

15-16 The Nature Conservancy, Savannah, Ga.
Theme and visit: Close look at the salt marshes, wetlands, and islands of the coast

16-20 American Bankers Association, San Francisco, Calif.

17-20 Farm and Industrial Equipment Institute, San Antonio, Tex.

17-21 National Association of State Foresters, Honolulu, Hawaii

18-22 American Society of Civil Engineers, St. Louis, Mo.

19-22 National Recreation and Park Association, Houston, Tex.
Keynote speaker: Rogers C. B. Morton, Secretary of the Interior

20-22 Association of Engineering Geologists, Portland, Oreg.

23-26 American Institute of Biological Sciences, Inc., Miami Beach, Fla.

24-28 American Institute of Planners, San Francisco, Calif.

25-28 American Water Resources Association, Washington, D.C.
Theme: Water Resources Development and the Environment

31-Nov. 2 Sprinkler Irrigation Association, Scottsdale, Ariz.
Panel: Role of sprinkler irrigation in the improvement of our environment

November

1-3 Geological Society of America, Washington, D.C.

3-5 National Water Resources Association, Dallas, Tex.

3-6 National Association of State Departments of Agriculture, Miami Beach, Fla.

5-9 Adult Education Association of the U.S.A., Los Angeles, Calif.

7-10 National Forest Products Association, San Francisco, Calif.

7-10 National Association of State Universities and Land Grant Colleges, New Orleans, La.

8-16 National Grange, Charleston, W.Va.

25-27 National Council for Geographic Education, Atlanta, Ga.

29-Dec. 3 Exposition of Chemical Industries, New York, N.Y.

29-Dec. 4 Western Forestry and Conservation Association, Portland, Oreg.

29-Dec. 5 National League of Cities, Honolulu, Hawaii

Review

Books

Leaders of American Conservation. By Henry Clepper. *1971. Ronald Press Company, 79 Madison Avenue, New York, N.Y. 10016. 353 pp. $10. (Sponsored by the Natural Resources Council of America.)*

This book is an alphabetized biographical compendium of the lives and careers of 360 men and women selected for "outstanding leadership in conserving our wildlife, forest, soil, and water resources" on the basis of nominations by one or more of the 40 member organizations of the Natural Resources Council of America.

Henry Clepper, the editor and one of the 121 contributors who furnished the biographical sketches, is chairman of the editorial committee of the Natural Resources Council.

In point of time, the list begins with John James Audubon and George Perkins Marsh and continues to present-day conservation leaders in government, business, and citizen conservation organizations.

Of the 360 conservation leaders listed in the book, four are women.

The book includes both the celebrated in conservation and the many people who have served the cause of conservation with great dedication but have never been accorded national recognition for their efforts. It is a handy reference list.—Katharine N. Mergen, *Information Division, SCS, Washington, D.C.*

Soil Erosion (Erozia Pody). By Dusan Zachar. *1970. Slovak Science Academy Publishing House, Bratislava, Czechoslovakia. 528 pp., illus.*

This book is an enlarged edition of a work with the same title, published in 1960. In comparing the two editions, the chapter on conception and classification of erosion phenomena has been substantially enlarged. The chapter on methodology of soil erosion research discusses four new groups of methods, and the chapter giving results of research in Slovakia has information on three new sites.

The author has divided his book into six chapters: Terminology and classification of erosion phenomena, the problems and methods of soil erosion research, the results of soil erosion research in Slovakia, the results of soil erosion research in Bohemia, analysis and summary of results, and soil erosion abroad.

Soil erosion is understood as destruction of soil through exogen geomorphologic factors. It occurs in natural conditons as well as in conditions altered by man. Man can influence the process of erosion both in a negative and positive sense, that is, either by its acceleration or inhibition. The author also considers artificial disintegration of soil, for example, by plowing, as soil erosion.

This book classifies erosion as surface erosion (exomorphous) and underground erosion (cryptomorphous). It contains a detailed classification of erosion as to its form and describes the stages of development of the different types and forms of soil erosion.

In the chapter on research problems and methods of water and wind erosion, the author gives attention to soil erosion intensity, to the influence of erosion on the soil, to the proneness of soil to erosion, to the effectiveness of erosion-control measures, and to the distribution of soil erosion and erosion control.

In the part of the book pertaining to soil erosion in Slovakia, the author presents his own research carried out in eight localities in regions of crystallic, flysh, carbonate (mostly trias), and loess rocks. He states that in Czechoslovakia precipitation erosion affects 2.93 million hectares, about 23 percent of the country; wind erosion affects about 1.63 million hectares, 12.6 percent of the country. Both kinds of erosion affect about one-third of the total land surface and one-half of the cultivated land. The rivers carry about 4 million tons of suspended load beyond the territor of the state.

The author gives a detailed dis cussion of the factors involved i erosion, especially precipitation concentrating mainly on so-calle critical precipitation. He gives sim ilar treatment to critical wind veloc ity.

As to conditons of erosion, spe cial attention is paid to the relatio of geology to the process of ero sion. In the investigated localities, the susceptibility to erosion between different soil types varied even a hundred times.

Inclination, length, form, and aspect of slopes are investigated. The author establishes that if the length of the slope increases twice, the erosion intensity expressed by the rill volume increases from 1.3 to 6.6, a sharp increase in erosion being observed at short slope lengths.

In discussing cultivation, the author emphasizes the results of research, which show that the direct protection of the soil by vegetation is the most effective method of controlling erosion on cultivated land.

The last chapter is a short survey of soil erosion in other countries. The author points out that soil erosion is on the increase and

in some countries is the most important factor influencing soil utilization. He estimates that half a million hectares of surface soil have been destroyed. The continents with serious wind- and water-erosion problems, in the order of the seriousness of the problems, are: Europe, North and Central America, Asia, South America, Australia, and Africa.

This book has a scientific character and should be an important contribution to the solving of soil erosion problems. Much valuable data, illustrated by a great number of photographs, prove the author's vast knowledge and experience in this sphere.

The literature cited, about 700 Czechoslovakian and foreign publications, is a valuable addition to the book.

The book is written in Slovak and includes summaries in English, Russian, French, and German. It is designed as well for agriculturists, foresters, and hydrologists as for geographists, soil scientists, and meliorators. It can be useful to nature-protection workers and anyone interested in nature.—MICHAL LIZAK, *engineer, Forest Research Institute, Zvolen Research Station, Oravsky Podzámok, Czechoslovakia.*

New publications

The Economic and Social Condition of Rural America in the 1970's. Part 1. *1971. Prepared by Economic Development Division, Economic Research Service, USDA (for the Com. on Govern. Operations, U.S. Senate). 141 pp., illus. $1.* Study—first of a series and first of its kind—is an overview of the economic and social conditions of rural America. It contains five categories—population, income and employment, health and education, housing, and government services and facilities—that graphically compare rural regions with our metropolitan centers.

The Look of Our Land, an Airphoto Atlas of the Rural United States: the East and South. COMPILED BY SIMON BAKER AND HENRY W. DILL, JR. *1971. USDA Agr. Hbk. 406. 99 pp., illus. $1.25.* Airphotos illustrate land use patterns and terrain in five land-resource regions in the Eastern and Southern United States. Accompanynig the photos of each area is a brief description of land use, climate, soils, and topography of that area. This atlas brings together the text of Agricultural Handbook 296, *Land Resource Regions and Major Land Resource Areas of the United States.*

Leaders in Outdoor Education. EDITED BY ORVILLE E. JONES AND DOUGLAS E. WADE. *1971. Northern Illinois University, Lorado Taft Field Campus, Oregon, Ill. 96 pp. $2.* A listing of 412 conservation education leaders in the United States and Canada. Includes a working cross-section of leaders, some of their interests, and addresses. Entries cut across not only outdoor education but also conservation, resource use, and environmental education.

Feed Your Feathered Friends. COMPILED BY DONNA SUTHER. *1971. "The Britton Journal," Britton, South Dakota. 30 pp. $2.25.* Gives recipes and gourmet dishes for both the seed eaters and the insect eating birds; recommends food for injured or baby birds.

Plants—How They Improve Our Environment. *1971. Soil Conservation Society of America (7515 N.E. Ankeny Road, Ankeny, Iowa 50021) and Men's Garden Clubs of America (5560 N.W. Merle Hay Road, Des Moines, Iowa 50303). A Better Environment Booklet. 15 pp., illus. $0.25.* A color comic strip-type booklet designed for elementary grades. It encourages young people to plant flowers, shrubs, and trees and contains a number of do-it-yourself projects that can help children to understand better the function of plants in the environment. The booklet cleverly illustrates photosynthesis.

Tennessee Valley: Land and Its Changing Use. *1971. TVA Bulletin Y-27. 88 pp., illus.* Comprehensive study of land and soil resources and uses in the Tennessee River Valley; lays a solid factual foundation for future efforts to prevent land misuse. Profusely illustrated with maps, tables, and graphs. (Makes extensive use of data gathered by SCS's resource development and cartographic divisions.)

Environmental Thrust Handbook. *1971. USDA. [52] pp.* Outlines about 22 projects as potential environmental thrusts at the community level. Some of these are: Safe drinking water; sanitary landfills; trash and junk removal; land use planning; sewage disposal for farm homes and rural community; animal waste disposal; landscape improvement; protecting the landscape; pesticide safety; safeguarding food quality; disposal of pesticide wastes and containers; improving recreational resources and rural housing; and noise reduction.

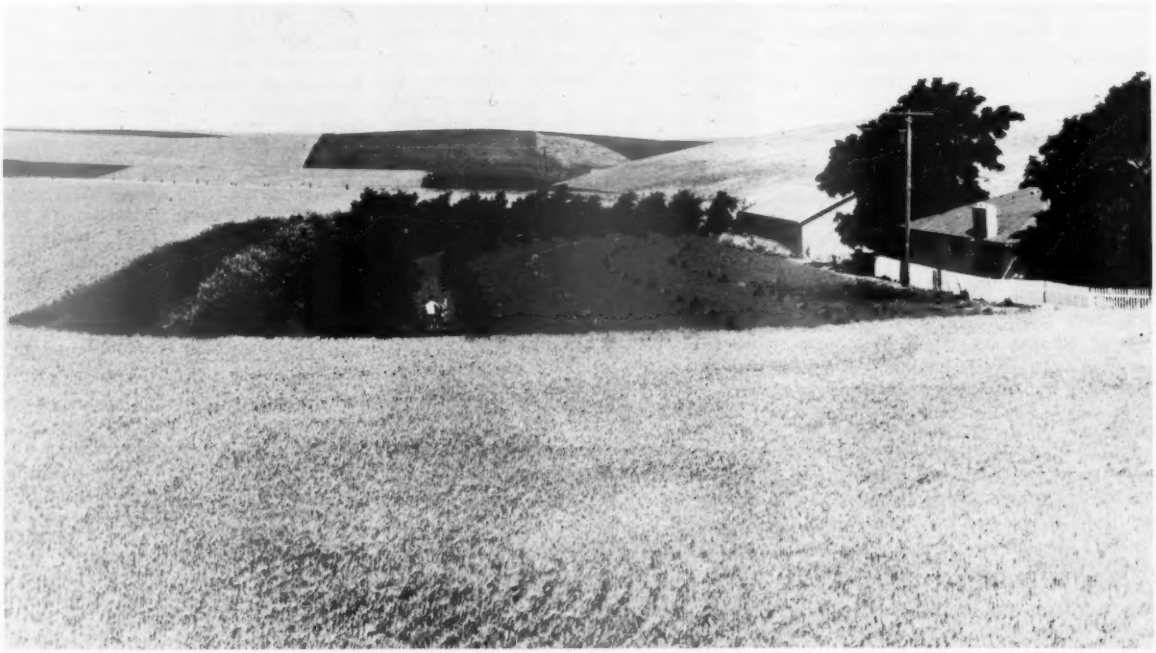
Our Living Land. *1971. U.S. Dept. of the Interior Environmental Rpt., Conservation Yearbook Series, No. 7. 98 pp., illus., color. $2.* This is the 1971 Department of the Interior conservation yearbook. It outlines Interior's responsibilities as custodian of public lands and as a research organization providing information on which resource management decisions can be based. It is written for the layman but contains valuable information for the environmental expert. The color photographs and unusual graphics afford a rich supplement to the text.

The New Forest. BY W. G. JONES. *1970. Offset Centre, Inc., Boalsburg, Pa. 58 pp., illus., color. $9.50.* An account of the new forest coming up in central Pennsylvania on supposedly barren land once stripped for bituminous coal. Includes descriptions and color photographs of trees and shrubs that have reclaimed thousands of acres of rough, rocky land, with only a small assist from man.

An Outline for Teaching Conservation in Elementary Schools. *Rev. 1971. USDA PA-268. 14 pp.* Suggests an approach to the teaching of environmental conservation as an integral part of all subjects in the elementary school curriculum. Organized by grade levels and with a major theme for each level, the outline gives special attention to reinforcing generalizations developed at earlier grade levels. Under each grade level are three main divisions: (1) objectives; (2) things to talk about; and (3) things to do. The latter two contain suggestions for teacher-pupil discussion and activities.

Forest Farmer, Manual Edition. *1971. Forest Farmers Association (1375 Peachtree St., N.E., Atlanta, Ga.). 208 pp., illus. $7.* A layman's manual on how to grow trees for profit and esthetic enjoyment. More than 50 authorities in forestry and related professions contributed to the manual. Subjects include how the latest tax laws affect forest farming, keys to identifying trees, how to practice multiple use, how to make a timber sale, and a complete list of timber markets and sources of forestry information and assistance. New developments in every phase of forest farming are highlighted.

Wall-to-wall trees. *A windbreak is a valuable improvement to any farmstead. A windbreak brings relief from hot sweeping winds in summer and drifting snow in winter. In the above photograph, Marston Fitzsimmons is breaking the soil to plant a windbreak. The open, gently rolling landscape around his wheat ranch, near Pomeroy, Washington, offers no protection from the blowing winds. In the bottom photograph, 3-year old walls of foliage have brought protection, beauty, and—an added dividend—birds and pheasants to the Fitzsimmons ranchhouse.—Earl R. Baker, district conservationist, SCS, Pomeroy, Wash.*



From the Administrator:

Let's talk about trees

Conservation districts and the Soil Conservation Service have always considered all of a cooperator's land in developing conservation plans—cropland, pasture, range, and woodland.

The last category is no small item. A third of the land in the United States is covered by trees, and in some parts of the country, more than 85 percent of the land area is woodland. National forests and other federally administered public lands make up a considerable part of this total; nevertheless, about 462 million acres are industrial, state, and private lands. The bulk of this—300 million acres—belongs to 4 million private landowners.

Most of what is written on the value of trees focuses on their use for lumber and other wood products. But conservationists are aware that trees supply many other needs of man and his environment. Many of the first trees planted with SCS, CCC, and district help were primarily for halting erosion and healing its scars.

Trees were planted in the sandy blow areas of Vermont, Michigan, and the Oregon coast; on the eroded hills of North Carolina, Georgia, and other Southeastern States; and in the ravished reaches of the Great Plains.

Today, as then, trees, in addition to supplying building material and other products, are vital to the protection of soil and water resources. Trees beautify highways, shelter them from wind and snow, and reduce traffic noise. They soften the blasts of hot or cold winds, trap drifting snow, and add to the beauty and comfort of those who live on farms and ranches. A stand of trees can be habitat for wildlife or furnish people with recreation or scenic retreat.

Many district cooperators already have been helped in developing conservation plans that include their woodland, just as they have been helped with their crop, pasture, and rangeland as part of the total land area.

Such planning recognizes that forests are not just a one-use resource. They must satisfy many needs. The viewpoints of biologists, recreation specialists, engineers, and range specialists often are brought to bear, along with the viewpoint of the forester, in helping the owner decide on the best uses for his stand of trees. His decision also could include plans for planting more trees.

Despite all that has been done, Conservation Needs Inventory data on woodland are convincing evidence that much remains to be done. Many more of the 4 million woodland owners and much more of the 300 million acres of private woodland ought to be included in the broad conservation-planning effort. Only then will landowners and the public at large reap the fullest possible benefit from this increasingly valuable resource.

The 3,000 conservation districts covering most of the private land in this country, together with a comparable number of SCS conservation planning specialists, are in an excellent position to work cooperatively with forestry agencies in this important work.

Kenneth E. Grant

UNITED STAT
GOVERNMENT PRINTI
DIVISION OF PUBLIC D
WASHINGTON, D. C

OFFICIAL BUSI
PENALTY FOR PRIVATE

SC JAN
UNIVERSITY MICROFILMS
SERIALS SECTION
300 NORTH ZEEB RD.
ANN ARBOR, MI 48106

U.S.MAIL

POSTAGE AND FEES PAID
U. S. GOVERNMENT PRINTING OFFICE